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## Standardization and development of moong dal based products

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### Abstract

The objective of present investigation “Standardization and Development of Moong Dal Based Products” was to standardize and develop the products using moong dal & their sensory evaluation. Moong Dal high in protein and yet easily digestible with the bonus of extra fiber makes this a super food. Moong bean possesses detoxicant, heat dispersing, diuretic, and hypolipemic properties. The bean is the perfect food for reducing weight. Moong beans are considered useful in defending against several chronic, age-related diseases, including heart disease, cancer, diabetes and obesity. Developed products of Moong dal were Halwa, Dahi Bada. The organoleptic evaluation of products was done by using (9-point Hedonic scale). The result of moong dal based products for (Halwa & Dahi Bada) (T1) was best in all treatments in case of all sensory attributes. The highest average score for overall acceptability was found in experimental samples. Developed products were accepted by members.

**Keywords:** Hypolipemic, detoxicant

### 1. Introduction

Mung Beans are a small, oval type of green bean that is high in fiber and when the bean is split in half it is referred to as moong dal. Moong dal, also known as Moong, Green gram or Golden Gram or Pesalu (in Telugu) is the seed of Vigna Radiate and is native to the Indian subcontinent. Apart from India it is also cultivated in China, Thailand, Indonesia, Burma, Bangladesh, Laos, Cambodia and also in hot and dry regions of Southern Europe and the Southern United states. It is especially popular in summer when it is eaten to prevent heatstroke, heat rash or prickly heat. Moong bean sprouts contain rich quantities of Vitamin, B, C and E. The green moong bean is native to India, Pakistan and Bangladesh. The bean is green with the husk and yellow when dehusked. Its best known use is the treatment of poisoning of various types, including foods (e.g. mushroom) and herbal drugs (e.g., aconite). Moong excellent source of many minerals, such as calcium, iron and potassium. The bean is the perfect food for reducing weight.

Moong beans are a high source of nutrients including: manganese, potassium, magnesium, folate, copper, zinc and various B vitamins. They are also a very filling food, high in protein, resistant starch and dietary fiber. Because of their high nutrient density, mung beans are considered useful in defending against several chronic, age-related diseases, including heart disease, cancer, diabetes and obesity. Can Help Lower High Cholesterol Levels and Protect Against Heart Disease. Helps Lower High Blood Pressure. One cup of cooked moong beans contains the following (percentages based on the RDAs for the average adult female): 212 calories, 14 grams of protein, 15 grams of fiber, 1 gram of fat, 4 grams of sugar, 321 micrograms of folate (100%), 97 milligrams of magnesium (36%), 0.33 milligrams of vitamin b1 thiamine (36%), 0.6 milligrams of manganese (33%), 7 milligrams of zinc (24%), 0.8 milligrams of vitamin B5 pantothenic acid (8%), 0.13 milligrams of vitamin B6 (11%), 55 milligrams of calcium (5%).

### 2. Objective

- To standardize and develop the moong dal based products.
- Organoleptic evaluation of developed products.

### 3. Materials and Methods

The present investigation entitled “Standardization and Development of Moong Dal Based Products” was carried out to standardize moong dal and its products. The study was conducted in department of food and nutrition, faculty of home science, KNIPSS Sultanpur.

Justified, judicious and scientific methodological consideration is indispensable for any investigation to deduce meaningful interferences concerning the objectives of the study. The study design reflects to the logical manner in which units of the study are assessed and analyzed for the purpose of drawing generalizations. Thus, with the view of available resources, the best procedures for taking correct observation should be first sorted out in a logical manner so that unbiased interference can be drawn. This chapter delineates information pertaining to the research design and methodological steps used for investigation. The research procedure has been distinctly described as under in the following heads:

#### 3.1 Procurement of material:

For the present investigation material e.g., moong was produced from the local market of Gauriganj city. The procuring was done in single a lot to avoid variation compositional differences so that the quality differences should be ruled out.

#### 3.2 Processing of raw material

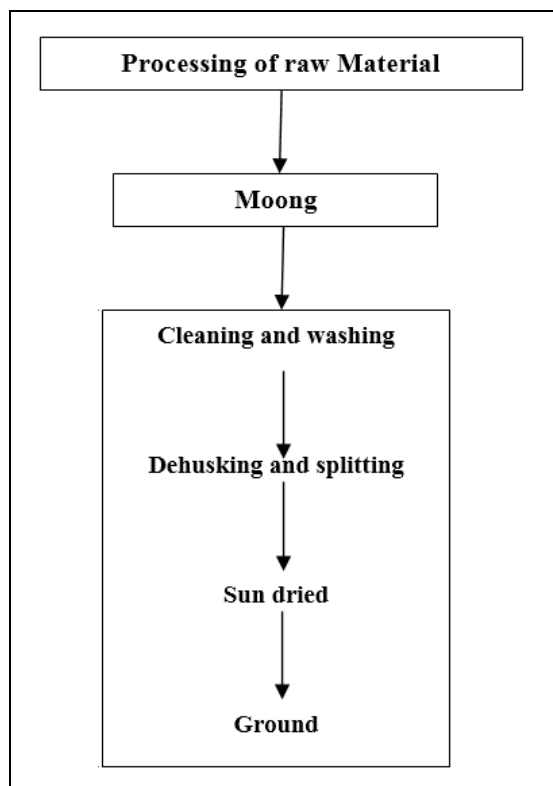


Fig 1: Flow chart of processing of raw material.

##### 3.2.1 Processing of moong dal

This material was subjected to cleaning, splitting, dehusking and drying in the following manner.

##### Cleaning and Washing

Moong dal was cleaned and washed 2 times with tap water and then rinsed with water to remove dirt, dust and other adhering impurity.

##### Dehusking and splitting

Split and dehusked the moong dal and got without dehusk moong dal.

##### Drying

Moong dal was spread on polythene sheet in shade and covered by muslin cloth to protect from foreign particles at room temperature at  $27\pm 3^{\circ}\text{C}$  for 2-3 days till they become brittle.

##### Powder and paste making:

The dried moong was converted into powder separately through grinder and strained to get uniform powder and paste.

##### A: Halwa

Ingredients	Amount	
	Controlled	Experimental
Moong dal paste(g)	-	120
Milk	-	150
Semolina (g)	120	-
Sugar (g)	120	120
Cardamom powder	½ tsp.	½ tsp.
Ghee (g)	80	80
Cashew nut	5-6	5-6
Water	Acc. to need	-

##### Method

- Heated ghee in a non-stick pan. Added moong dal, lower heat and mixed well.
- Sautéd, stirring continuously, till golden brown or for 20-25 minutes.
- Heated ½ cup milk in another non-stick pan.
- Heated sugar and 1 cup water in another non-stick pan. Cook till sugar dissolves completely.
- Added milk to moong dal and mix well.
- Added a cardamom powder to moong dal mixture some almond, cashew nuts and sugar syrup.

##### B: Dahi Bade

Ingredients	Amount	
	Controlled	Experimental
Moong dal (g)	-	250
Urad dal (g)	250	-
Asafoetida	½ tsp.	½ tsp.
Green chilli	2-3	2-3
Fruit salt, and salt	Acc. to taste	According to taste
Oil	1 ½ tsp.	
Curd	250	250
Musterd seed	1 tsp.	1 tsp.
Cumin seed powder	2 tsp.	1 tsp.
Red chilli powder	½ tsp.	½ tsp.

##### Method

- Cleaned, washed and soaked the moong dal in enough water in a deep bowl for 3 to 4 hours.
- Drained, added the green chillies and blend in a mixer to a smooth paste, using approx. ½ cup of water.
- Transfer the paste into a bowl, add the asafoetida and salt and mix well.
- Sprinkle the fruit salt and 1 tbsp. of water over it. When the bubbles form, mix.
- Covered the bottom of a flat frying pan with ½-inch of oil and heat over medium high heat. Test the oil by dropping a little batter into it. When the oil sizzles, it is ready.

- Placed one tablespoon of batter into the oil. The oil should not be deep enough to cover the batter; the vadas will be softer if they are shallow-fried. The vadas will begin to expand slowly, without changing colour.
- Fried the vadas in small batches, until golden all around.
- After you have made all of the vadas, place them in lukewarm water and soaked for about 20 minutes.
- Squeezed the vadas gently to remove the water, being careful not to break the vadas. Set aside.

**4. Result and Discussion**

The data were collected on different aspects per plan were tabulated and analyzed statistically. The result from the analysis presented and discussed in chapter in the following sequence.

**4.1. Organoleptic evaluation of moong dal based products.**

**4.2. Organoleptic evaluation of moong dal based products.**

- Flavor and taste
- Body and texture
- Color and appearance.
- Over all acceptability.

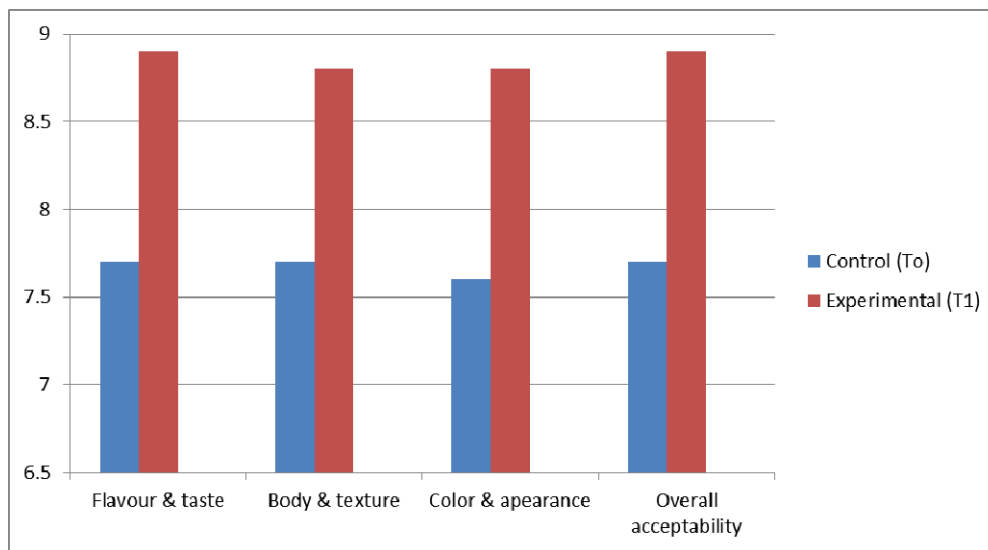
Table 1. shows that the experimental (T1) obtained maximum 8.9, 8.8, 8.8 and 8.9 for flavour & taste, body & texture, color& appearance and overall acceptability; while control (T0) obtained 7.7,7.7,7.6, and 7.7 for flavour & taste, body

&texture, color& appearance and overall acceptability respectively. This indicated that the experimental (T1) halwa was found to be fallen under category of “Like Very Much to like extremely”.

**Table 1:** Organoleptic evaluation of Halwa

Product	Flavor & taste	Body \ texture	Color & appearance	Overall acceptability
T0(controlled)	7.7	7.7	7.6	7.7
T1(experimental)	8.9	8.8	8.8	8.9

Similarly, Gavirangappa Hithamani *et al*, (2014) [2] studied that Cereals (wheat and sorghum) and legumes (green gram and chickpea) commonly consumed in Asia and Africa were evaluated for polyphenolic content. Bio accessibility of polyphenols from these grains as influenced by domestic processing was also estimated. Total polyphenol content reduced by 31% on sprouting but increased to 24% on roasting in green gram. Bioaccessible total polyphenols from these grains were in the following order: green gram > chickpea > wheat > sorghum. Domestic processing of these grains had minimal/no effect on the bio accessible total flavonoid content. Microwave heating significantly enhanced the concentration of bio accessible polyphenols especially from chickpea. Thus, sprouting and roasting provided more bio accessible polyphenols from the cereals and legumes studied.



**Fig 2:** Mean overall acceptability of Halwa

**Table 2:** Organoleptic evaluation of Dahi Bade

Product	Flavor & taste	Body \ texture	Color & appearance	Overall acceptability
T0(controlled)	8.0	8.1	7.9	8.0
T1(experimenta)	8.9	8.9	8.8	8.9

Table 2 shows that the experimental (T1) obtained maximum 8.9, 8.9, 8.8, and 8.9 for flavour & taste, body & texture, color & appearance and overall acceptability; while control (T0) obtained 8.0, 8.1, 7.9, and 8.0 for flavour & taste, body & texture, color & appearance and overall acceptability respectively. This indicated that the experimental (T1) Dahi Bade was found to be fallen under category of “Like Very Much to like extremely”.

Bor *et al*, (2015) [3] studied that a major by-product of dal mills is pulse husk which is basically used as ruminant feed. Its

nutritional significance in human diet is less known. Keeping in view that pulse husk is a rich source of dietary fiber, the present study was undertaken to formulate various recipes of snack food items using green gram husk in varied proportions. The results indicated that among all the food items prepared biscuit with 12.5 per cent in corporation of green gram husk found to be most acceptable. It was further evaluated for nutrient composition and glycemic response in normal subjects in the age group of 25-28 years. Appreciable amount of iron (23.75 mg/100g), calcium (113.33 mg/100g) and total dietary fiber (14.98%) content was seen in fiber rich biscuits. The glycemic index of fiber rich biscuits (46.26) was significantly low than the control biscuits (68.70). Thus the green gram husk incorporated biscuits with high dietary fiber and low glycemic index can be recommended for inclusion in the diet of people suffering from diabetes and constipation.

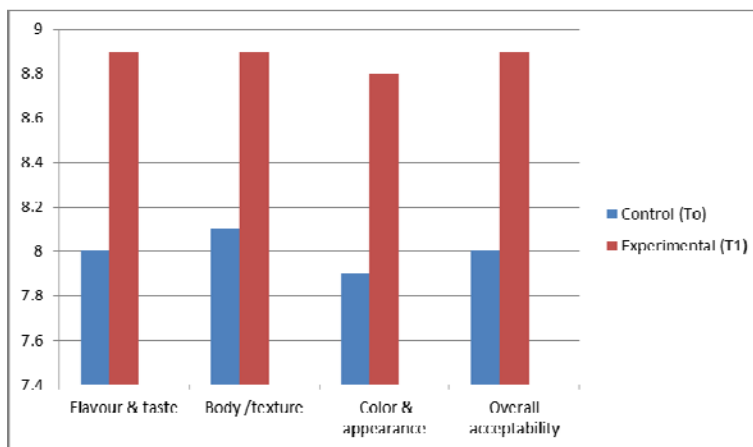


Fig 3: Mean overall acceptability of Dahi Bade

## 5. Summary and Conclusion

Moong Beans are a small, oval type of green bean that is high in fiber and when the bean is split in half it is referred to as moong dal. Moong bean sprouts contain rich quantities of Vitamin, B, C and E. Moong beans are a high source of nutrients including: manganese, potassium, magnesium, folate, copper, zinc and various B vitamins. They are also a very filling food, high in protein, resistant starch and dietary fiber. Because of their high nutrient density, mung beans are considered useful in defending against several chronic, age-related diseases, including heart disease, cancer, diabetes and obesity.

The present investigation entitled “Standardization and Development of Moong dal based products” with two objectives.

- ❖ To develop Moong dal based products.
- ❖ Organoleptic evaluation of moong dal based products.

The experimental work was carried out in the department of food and nutrition, faculty of home science, K.N.I.P.S.S. Sultanpur. To standardized and development of moong dal based products, requirement different materials like, moong dal flour, sugar, milk, moong dal paste, etc. were used in the experimental would be purchased from local market of Sultanpur.

In view of the facts regarding nutritional quality of developed products moong dal (ICMR, 2010) was made the developed acceptable moong dal based products.

- (a) Experimental (T1) Halwa obtained maximum 8.9, 8.8, 8.8 and 8.9 for flavor & taste, body & texture, color & appearance and overall acceptability; while control (T0) obtained 7.7, 7.7, 7.6 and 7.7, for flavor & taste, body & texture, color & appearance and overall acceptability respectively. This indicated that the experimental (T1) Halwa was found to be fallen under category of “Like Very Much to like extremely”.
- (b) Experimental (T1) Dahi Bade obtained maximum 8.9, 8.9, 8.8, and 8.9 for flavor & taste, body & texture, color & appearance and overall acceptability; while control (T0) obtained 8.8, 8.1, 7.9, and 8.0 for flavor & taste, body & texture, color & appearance and overall acceptability respectively. This indicated that the experimental (T1) Dahi Bade was found to be fallen under category of “Like Very Much to like extremely”.

The developed products were given to the panel of 10 judges products were tested for flavour and tested for flavour and taste, body and texture, colour and appearance, overall acceptability. The Organoleptic

evaluation of products was done by using score card method (9-point hedonic scale). The result of moong dal based products Halwa and Dahi Bade (T1) were best in all treatments in case of all sensory attributes.

The highest average score for overall acceptability was found in experimental products made by developed preserved food products were mostly accepted by panel member.

## 6. Recommendation

- Development of products by using moong dal.
- Nutrient analysis of moong dal & moong dal based products.

## 7. Limitation of Study

1. Since the study is carried out for short period so that and other resources are limited to an extent.
2. The market of this study was purchased for local market of Sultanpur.
3. It was an average method which has its own limitation of respondent dependent information without any alternative.

## 8. Acknowledgement

All glory to the almighty, whose blessing in the success behind this project praise pride and perfection belong to almighty. So first of all I would like to express my deepest sense of gratitude to the omniscient power of the universe, the almighty God. This project would not have been possible without the support of many people. Word fails to express my sense of indebtedness and profound gratitude toward my honourable Advisor Dr. Mamta Jaiswal (Head) and co-advisor Miss Kiran Agrahari, & Co-advisor Miss Archana Singh Faculty of Home science, Kamla Nehru Institute of Physical and Social Science, Sultanpur (U.P.), for her noble advice, constructive criticism and valuable Suggestions. Many thanks to my honourable advisor for her innovative ideas, Valuable suggestions unending inspiration enduring fortified during my study. Her continued encouragements, positive attitude towards my ability made the achievements of this goal easy to tackle and complete to my work in time. It is rare opportunity and the proud privilege of my life to express my best regards senses of homage and gratitude to my reverent parents Mr. Rajendra Pratap Singh and Mrs. Manju Singh and my beloved Brother and Dee. My Family’s constant inspiration, everlasting affection, their blessings, sacrifices, emotional, financial and moral support are the prime fact which made me capable of doing this all.

From the very special corner of my heart I wish to record my

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